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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,813	06/27/2006	Toshiaki Kawanishi	930055-2045	4947

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EXAMINER	
SAKELARIS, SALLY A	
ART UNIT	PAPER NUMBER
1797	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/584,813	KAWANISHI ET AL.	
	Examiner	Art Unit	
	Sally A. Sakelaris	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 June 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-19* is/are pending in the application.

4a) Of the above claim(s) *1-7* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/27/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election of Group II claims 8-19 in the reply filed on 6/3/2009 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 8, 11-12, 15-18 rejected under 35 U.S.C. 102(b) as being anticipated by Stanbro et al. (US 4,728,882).

With regard to claim 8, Stanbro et al. teach an alcohol concentration sensor of an electrostatic capacitance type for measuring an alcohol concentration in fuel for internal combustion engine mixed with alcohol in Figure 1, comprising: an insulating substrate (14); and a pair of electrodes (10) and (12), arranged on a surface of the insulating substrate to produce an electrostatic capacitance, wherein the insulating substrate is made of a material showing a specific dielectric constant of not higher than 5 (Col. 7 line 55) in their alumina substrate whose inherent property of having a dielectric constant of 4.5 is evidenced by the *Dielectric Constant Reference Guide* on Pg. 3.

With regard to claim 11, Stanbro et al. teach the above sensor wherein each pair of electrodes is at least covered partly by an insulating protective film (Fig.1 (16)).

With regard to claim 12, the insulating protective film is made of parylene polymer whose inherent dielectric constant as evidenced by the *Parylene Properties and Characteristics* guide to be less than 5 on Pg 2.

With regard to claim 15, Stanbro et al. teach an oscillation circuit (Fig. 8 and 9) including a pair of electrodes (32) and a processing section for computationally determining the alcohol concentration according to an oscillation frequency of the oscillation circuit via the schematic shown in Figure 9 and microcomputer (72).

With regard to claims 16, Stanbro et al. teach a processing section that computationally determines the alcohol concentration using a calibration curve in their microprocessor system of Figure 9. The output frequency of each oscillator (62,64) is fed to an associated counter (66,68) which sends the frequency count in digital form via bus 70 to microprocessor 72. A look up table containing data similar to that shown in Fig.2, is stored in the microcomputer and a determination of the concentration of the analyte in the fluid medium is made (Col. 9 lines 40-59).

With regard to claim 17, the look up table within the microprocessor includes a relationship that corresponds to the alcohol concentration and the oscillation circuit, namely the determination of the concentration of the analyte in the fluid medium is made (Col. 9 line 50-55) within the range of 0-5% accuracy.

With regard to claim 18, Stanbro teach that the apparatus determines the concentration of hydrocarbons such as hexane, heptane, benzene, and cyclohexane which are all constituent elements of gasoline (Figure 2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. Claims 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stanbro et al. (US 4,728,882).

With regard to claim 9, Figure 1 and 3 show the scale of the alcohol concentration sensing apparatus of Stanbro. The insulating substrate (14) and (28) made out of alumina wafers for example, shown in Figures 1 and 3 respectively are shown in comparison to the insulating layers of (16) and (30). Stanbro teach that the insulating layers are each about 2.5 microns thick and the substrate is the thickness of alumina as relayed in the drawing to be only about 100 times greater in size.

With regard to claim 13, Col. 4 line 41 teaches the thickness of the insulating layer (16) to be 1 to 2.5 microns.

Stanbro does not explicitly teach a thickness for the insulating substrate or a thickness of the insulating layer that is between 0.4 and 1 micron.

It would have been obvious at the time the invention was made to one of ordinary skill in the art to have used the claimed thicknesses for the insulating substrate and insulating layers. One of skill in the art would have followed the relative proportions depicted in Figures 1 and 3 to make the thickness of the alumina wafers such that it resembled an increased thickness as compared to the insulating layer (16 and 30) and therefore a substrate made of a thickness between 200μm and 1000μm for the expected benefit of "providing high sensitivity to trace hydrocarbon or other selected analytes in solution" (Stanbro, Col. 2 lines 14-16). Furthermore, where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art. Also, the optimization of decreasing the thickness of the layer from 1 to less than one is minimal and would clearly be obvious to do as an optimization step for proper capacitance to take place.

3. Claims 10, 14, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stanbro in view of Raymond (US 4,510,436).

The teachings of Stanbro can be seen above.

With regard to claim 14, Stanbro teach a case and ends of electrodes. Stanbro also teach a case that exposes part of the insulating substrate to the outside in Figure 1 and in the abstract.

With regard to claims 10 and 19, Stanbro do not teach that their electrodes are between 0.01 and 0.8 μm or are of the thin film variety.

Raymond teach a dielectric measuring system made from a pair of joined together thin film capacitors with the electrically conductive thin metallic film grown to 2000 Angstroms (i.e., 0.2μm) (Col. 3 line 17).

With regard to claim 14, Stanbro do not teach lead-out electrodes.

With regard to claim 14, Raymond teaches buses 34 and 32 that connect each electrode to contact pads (36) to seal the connection ends. Furthermore, Raymond et al teach a resin cover and case made out of polyvinyldene fluoride (Col. 2 line 39). The case/cover (22) exposes to the outside at least a part of the surface of the insulating substrate (31).

It would have been obvious at the time the invention was made to one of ordinary skill in the art to have used the thin film electrodes and lead-out electrode arrangement of Raymond within the sensor of Stanbro as the introduction of thin film electrodes confers benefits of lower volume, weight, cost, and higher application temperature to the apparatus.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sally A. Sakelaris whose telephone number is 5712726297. The examiner can normally be reached on Monday-Friday 8-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 5712721267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sally Sakelaris

/Jill Warden/
Supervisory Patent Examiner, Art Unit 1797